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New Species of Western Plants

BY ALICE EASTWOOD

Zygadenus micranthus

Bulb globose, clothed with brownish black outer coats, about 1.5 cm. in diameter: stems slender, erect, 1–5 dm. high, scabrous, somewhat leafy: leaves falcate, the lowest more than half the height of the plant, striate, scabrous, the edges folded together, varying greatly in width in different plants: flowers white, small, 1 cm. or less in diameter, in a simple raceme or a panicle which branches at base: pedicels spreading horizontally like candelabra, filiform, 2–4 cm. long: lowest bracts foliaceous, the upper becoming much smaller, thin and white-membranous, all attenuate: perianth with outer divisions sessile, ovate, obtuse, 4.5 mm. long, 3 mm. wide or less; inner divisions oblong, 6 mm. long or less, a little more than 2 mm. wide, the yellow claw about 1 mm. long and almost as broad; glands toothed, the teeth extending to the veins, concave on the inner side: stamens shorter than the petals, with rather thick filaments 4 mm. long; anthers cordate, 1.5 mm. long: pistils 1 cm. long, with the styles half the entire length: capsules becoming 12 mm. long, slightly narrowed at top, with styles persistent and erect: seeds 4.5 mm. long, irregular.

This elegant species was collected by the author, near the end of May, 1902, on the road between Cahto and the Eel River, Mendocino County, California, also on Red Mountain, in the northern part of the same county, at about the same time. There are specimens also in the herbarium of the California Academy of Sciences from Snow Mountain, collected by Mr. T. S. Brandegee, the twenty-first of June, from which the description of the fruit is taken.

Allium Hickmani

Small, slender plants not more than 1.5 dm. high, often 2 scapes from the same bulb or from 2 somewhat united bulbs: outer coats of bulbs with a wavy, fissile reticulation somewhat similar to *A. serratum*, but the wavy lines less zigzag: leaves filiform, longer than the scapes, 2 or 3, sheathing the stem at base below the surface of the ground: umbels generally with about 10 flowers, on slender pedicels 5–10 mm. long; bracts transparent, membranous, united at base but generally splitting down on one

side, broadly ovate, mucronate, surpassing the pedicels : perianth white throughout or tinged or veined with rose-color, with all the divisions similar, ovate-lanceolate, acuminate, 5 mm. long, 2 mm. wide : stamens shorter than the divisions, the filaments narrow, flat, broadening towards the base and at the insertion extending the width of the division ; anthers small, white, 0.5 mm. long : ovary without crests : seeds black, rough.

This is common on the trail between Monterey and Pacific Grove, California, and was seen in but one locality. It has been considered a form of *A. peninsulare* Lemmon by Marcus E. Jones (Contr. to Western Bot. 10: 86. 1902). While I have not seen the type of *A. peninsulare*, I do not believe it to be the same, for the description is that of a plant entirely different and the range far removed geographically. It is named in honor of Mr. J. B. Hickman, who sent me the first specimens some years ago. The type was collected by the author, April 15, 1900.

Fritillaria Brandegei

Bulb unknown : lower leaves wanting : stems apparently tall, stout, glabrous, obtusely ribbed : leaves in whorls of 5-9, lanceolate, 7-9 cm. long, 1-2 cm. wide, entire, obtuse : internodes a little shorter than the leaves : flowers about 7, on recurved, rather thick pedicels, 2 cm. long : bracts foliaceous, erect, diminishing upwards, 2-5 cm. long : perianth purplish, campanulate with obtuse base ; divisions 2 cm. long, 4 mm. wide, oblong-lanceolate, becoming involute and spreading, somewhat revolute from the base, obtuse and somewhat hooded at apex and with a tuft of silky hairs : nectaries obscure : filaments spotted with purple, 2 mm. broad, 6 mm. long, acuminate ; anthers sagittate, 3-4 mm. long : ovary winged, truncate, 6 mm. long : style surpassing the stamens, 1 cm. long : stigma capitate, scarcely lobed.

This is named in honor of T. S. Brandege, who collected it at Coburn's Mills, Tulare County, California. It differs from all known species in the segments of the perianth, revolute from the base, and the broad filaments. The lobed stigma puts it into the group with *F. pudica* and *F. pluriflora*.

Iris amabilis

Rootstocks slender, sheathed with the bases of the leaves : stems simple, slender, erect, or, when tall, slightly geniculate, glabrous, bright green : basal leaves short, chartaceous ; cauline

leaves 2 or 3, the longest not extending to the flowers, narrow, 1.5 dm. long, 4 mm. wide, the margin with a narrow, white, minutely serrulate edge: spathes 2-flowered, the largest bract scarcely reaching the tube of the perianth, acuminate, green, with white membranous margins, the longest about 8 cm. long, inner ones shorter, more membranous: flowers on pedicels 2.5 cm. long, longer than the 3-sided, linear-oblong ovary: tube of the perianth slender, cylindraceous, 3 cm. long, widening at the throat; standards spatulate with broad claws longer than the blades and about half as wide, together 5 cm.; blade 1.5 cm. wide, pale cream or lilac-white, marked with lilac veins or dots, the central rib yellow except the upper three fourths of the blade; falls pale lilac, lanceolate, undulate, 5 cm. long, 1.5 cm. wide: style-branches 3 cm. long, with oblong crests 1 cm. long, the margins erosely dentate; scale of the stigma broadly deltoid, obtuse: stamens with broad, subulate filaments, half as long as the anthers, wider at base, together more than 2 cm.: fruit immature.

This is closely related to *Iris Douglasiana* Herb. It is readily distinguished from any of the forms of that variable species by much narrower, paler green, very sharply attenuate leaves, and much longer and more slender calyx-tube. The flowers have a delicate perfume, and in this respect it differs from all other known species in California.

This was collected by Mr. Charles W. Kitts, at Nevada City, California, May, 1902. The description was made from fresh material.

Chorizanthe villosa

Stems prostrate, spreading, forming loose mats 2-4 dm. in diameter, canescently villous throughout with fine, silky, upwardly-spreading hairs, the inflorescence glandular: leaves opposite, oblong-spatulate, tapering to long margined petioles which broaden and are connate at base, the entire leaf 2-4 cm. long: cymes pedicellate, 2 or more together, rarely solitary at the ends of short branchlets, these scattered and alternate with a solitary flower in the opposite leaf-axil or at the base of the peduncle; sometimes the solitary flower alone is present and is found at even the lowest leaf-axils: bracts at base of involucre linear, tipped with a stout straight spine which varies in length: involucre pale green, glandular as well as villous, pedicellate, urn-shaped but not constricted below the teeth, corrugated between the ribs, the alternate divisions stronger and tipped with a bristle; bristles unequal, one much longer than the rest, the others alternately shorter, glabrous at tip but villous below, rarely the longest bristle is uncinat at

tip, the others are invariably straight: perigonium with stipe-like base, tubular funnelform, with yellowish green glabrous tube and six obtuse, villous divisions about half as long as the tube, pale pink with darker midnerve, oblong, mucronate: anthers pale pink, exserted from the throat of the perigonium: akenes with membranous coat, margined or slightly winged on the angles.

This is near *C. pungens* Benth., from which it differs in pubescence, involucre, spines, thick involute cartilaginous instead of membranous margins, corolla of different shape with narrower and more deeply cut lobes.

The figure of the type of *C. pungens* as shown in Trans. Linn. Soc. 17: pl. 19 (2 a, b, c, d, e), has been taken for comparison. This differs from *C. pungens* as it is understood by the authors of the present in having all the teeth of the involucre tipped with straight instead of uncinat bristles.

Chorizanthe villosa grows on the sand-dunes at Bodega Point, Sonoma County, California, and blooms in the summer.

Spraguea eximia

Winter annual or biennial from a tap-root, with a rosulate cluster of leaves from the one or more crowns, glabrous throughout: radical leaves oblanceolate, tapering to margined petioles as long as the blades, together 1–3 cm., mucronate, entire or with 1 or 2 teeth on the sides; cauline leaves spatulate, bract-like or foliaceous, scattered, from 2 mm. to 1.5 cm. long: flowering stems reddish, 3–10 cm. or perhaps more in height, the scorpioid spikes in simple or compound umbels, sometimes with a second umbel below the main one; peduncles filiform, clothed with minute, white membranous bractlets, the involucre of larger, somewhat thicker bracts; flowers crowded in short spikes at the ends of the peduncles, pedicels 1 mm. long: calyx rose-colored, membranous, broadly orbicular, 5 mm. or a little more in width, about 4 mm. in length, emarginate at apex, reniform at base, thickened near the apex, with a greenish or reddish spot: petals 4, white, membranous, elliptical, acute at apex, 4 mm. long, 2 mm. wide, the white tips surpassing the calyx at or after anthesis: stamens 3, not quite as long as the petals, the anthers white, elliptical: ovary sessile, ovate, white-membranous, showing the seeds within: style surpassing the petals; stigma 2-lobed: seeds about six, orbicular, papillate.

The short stamens separate this from *S. umbellata* Gray, to which it is allied, though differing also in other characters.

It was collected by Miss Agnes Bowman at Sulphur Banks, Lake County, California, May 18, 1901. It is a most beautiful plant, well worthy of cultivation.

Silene grandis

Stems many, knotted at the nodes, generally simple, 3–6 dm. high, growing in clumps from a thick, white, fleshy rootstock: radical leaves oblong-spatulate, acute, entire, somewhat fleshy, glandular and velvety-pubescent, with rather indistinct veins; blade 5 cm. long, 2 cm. wide, tapering to a margined petiole equalling the blade in length and 3 mm. wide, sheathing the stem; cauline leaves sessile by a connate-clasping base, oval to ovate, acute, 3–5 cm. long, 2–4 cm. wide, the chief veins distinct: flowers fascicled in the upper axils on peduncles as long as the calyx, very glandular-hairy: calyx inflated, campanulate, 12 mm. long, the 10 green ribs alternating with as many whitish furrows; divisions 5, broad, triangular, with membranous and ciliate margins: corolla greenish white, the petals with claws exerted from the calyx, 13 mm. long, tapering from a broad, membranously margined, spatulate upper part, 4 mm. wide, to a base 0.5 mm. wide; blade with two deeply parted, obtusely laciniate divisions, 6 mm. long, 4 mm. wide, with a tooth-like, narrow lobe almost at right angles and varying in length from 1–3 mm.; appendages in the throat fan-shaped, crenate, 3 mm. long and about as wide: stamens in two sets, the longer equalling the corolla-appendages, the shorter a little surpassing the styles; anthers brown; filaments filiform: ovary, petals and stamens on a disk surmounted by a yellow ring: styles 8 mm. long, glabrous except the glandular-hairy stigmatic surface: ovary glabrous.

This interesting but unattractive *Silene* grows on the sides of the promontory at Bodega Point, Sonoma County, California, looking towards the south and west. On the south side it is twice as tall as on the side where it endures the force of the west wind. It is also more abundant and in every way more luxuriant. It is probably quite local but may be found elsewhere on the coast. It is in bloom almost throughout the spring and summer.

Eschscholtzia dolichocarpa

Annual, leaves mostly radical, the flowers terminating long, subscapose peduncles, glabrous throughout except for a peculiar pubescence of tentacle-like hairs on the bases of stems and leaves: leaves pinnately dissected with the divisions narrow,

petioles twice as long as the blades, together 8 cm.: peduncles stout, some 3 dm. tall: torus with membranous inner rim, the outer very narrow, revolute: buds acuminate, 2 cm. long, covered by a thin calyx: corolla yellow, the cuneate-obovate petals 3.5 cm. wide, 4 cm. long: pod stout, 1-1.5 dm. long, strongly ribbed like the peduncle of which it seems a prolongation: seeds obovoid or rhomboid.

This was collected by Mr. R. A. Plaskett at Willow Creek, near Point Gorda in the Santa Lucia Mountains, Monterey County, California, April 8, 1898, being no. 84 of his collection.

It is readily distinguished from allied species by the large flowers and remarkable pods and peduncles.

Eschscholtzia urceolata

Annual, many-stemmed, 1-2 dm. high, glaucous and glabrous except for a scattered pubescence of peculiar tentacle-like hairs, generally on the young growth, the lower part of the stems and leaves and the buds: leaves shorter than the scapose peduncles, with the slender petiole generally surpassing the pinnately tri-sect blade, together 3-8 cm. long, the ultimate divisions linear, obtuse or rarely mucronate, 2-5 mm. long: earliest flowers on long stout, ribbed, scapose peduncles, 1-1.5 dm. long, the later ones on leafy stems: buds drooping: calyx thin, ovate, about 1.5 cm. long, obtuse, sometimes glabrous: corolla yellow, the cuneate-obovate petals 2.5 cm. long, and almost as wide at the top: stamens about 1 cm. long, the filaments somewhat shorter than the narrowly linear anthers: styles 4, varying in length, minutely papillate: pod stout, ribbed, acuminate, about 6 cm. long: receptacle urceolate, 7 mm. long, the outer rim lacking, the inner white, membranous, erect.

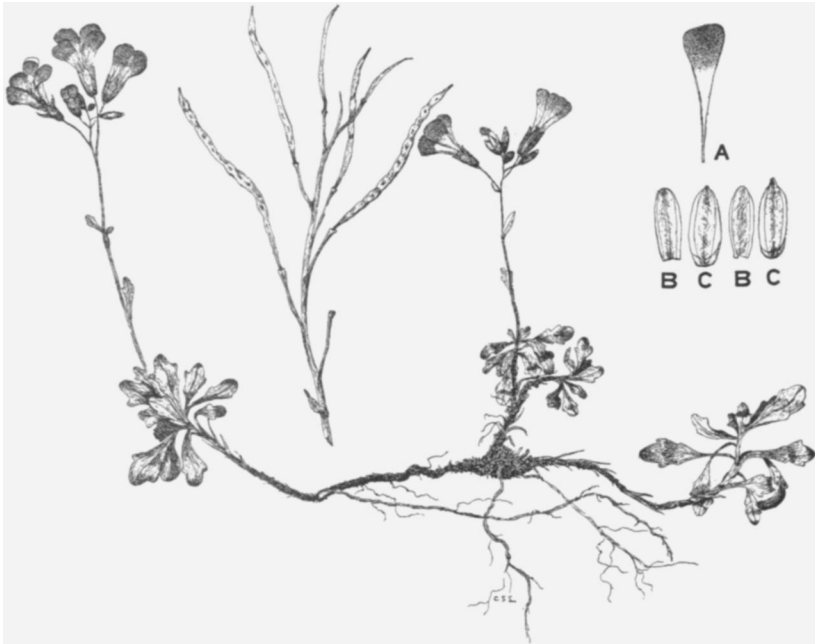
This beautiful species was collected by the author on the white hills separating the valley of the Cuyama from the Carisa Plains on the boundary between Santa Barbara and San Luis Obispo Counties, California, May 2, 1896.

It is related to *E. hypocoides* Benth., but is distinctly differentiated from that and other allied species by the peculiar shape of the torus.

Arabis McDonaldiana

Stems many, 5 mm. to 2 cm. high, from a branched caudex, forming mats, slender, glabrous: leaves rosulate at base, spatulate, repandly toothed, the few teeth sometimes bristle-tipped; blades 5-10 mm. long on margined petioles as long or longer, broaden-

ing at base and imbricated: cauline leaves few, 5 mm. long, from spatulate to narrowly oblong, obtuse, sessile, appressed to the stem, entire or with obtuse teeth: flowers corymbose, fragrant: sepals greenish or purplish black, two narrowly oblong, obtuse, 4 mm. long, 1–1.5 mm. wide, the other two broader, spurred at



Arabis McDonaldiana. A, petal. B, inner sepals. C, outer sepals.

base, membranously margined: petals crimson, oblanceolate, tapering to the base with the distinction between blade and claw not evident, truncate or obtuse at apex, 9 mm. long, about 3 mm. broad: stamens with ribbon-like filaments, the longest as long as the sepals; anthers narrowly oblong, yellow, 1.5 mm. long: siliques 3–4 cm. long, erect-spreading, becoming racemose with pedicels 1 cm. long: style 1 mm. long.

This beautiful and fragrant *Arabis* was collected by the author in the northern part of Mendocino County, California, on Red Mountain, May 26, 1902. It is named in honor of Captain James M. McDonald, to whom botanists of the Pacific coast are indebted for his generosity in publishing Greene's West American Oaks and the author is personally grateful for aid in her work.

It is allied to *Arabis blepharophylla* H. & A., from which it differs in shape and size of leaves, almost complete absence of pubescence, smaller flowers and longer and more slender pods. These differences are added to a general dissimilarity in appearance, so that the two species would never be confused, though the flowers have the same color and fragrance.

Cleomella nana

Annual, low, 3–8 cm. high, simple or branching from near the base, the branched plants having a diameter about equal to the height; stems striate with fine broken lines and occasionally verrucose, glaucous: leaves trifoliate, the petioles generally shorter than the petiolulate leaflets; stipules tufts of hairs; leaflets narrowly oblong-lanceolate, the lateral 6 mm. long, the middle 9 mm., 2–3 mm. wide, aristate, tapering at base, entire but somewhat revolute, midvein distinct, surface (under a good lens) covered with minute reticulation: flowers in sessile racemes on spreading pedicels 5–10 mm. long; lowest bracts like the leaves, upper like the stipules: calyx of 4 subulate-aristate divisions 1.5 mm. long, stipe with a bulb-like swelling at base, deflexed, becoming 6 mm.: petals yellow, oval, 4.5 mm. long, 2 mm. wide, obtuse, subsessile: stamens surpassing the petals, the filaments 10 mm. long; anthers linear, mucronate, almost 2 mm. long: style 1.5 mm. long, stigma 2-lobed: capsule when young rhomboidal, later becoming more ovate, not winged, minutely reticulated, 5 mm. wide, 4 mm. long: seeds 2, yellow-brown, suborbicular, 2 mm. in diameter, flattened, the outer coat transparent so that the space between the caulicle and the cotyledons is visible and resembles the mouth of a fish.

This interesting *Cleomella* was collected by the author, May 24, 1892, between Thompson's Wash and Moab, in southeastern Utah. It is near *C. obtusifolia* Torr. & Frém., but differs in habit, flowers, and fruit. The strongly-winged fruit of *C. obtusifolia* presents an entirely different appearance.

Wislizenia scabrada

Annual, erect, branching divaricately from the base and also above, 3 dm. or more in height, rather stout, scabrous throughout; stems purplish, ribbed: leaflets 3 or rarely 4, obovate or elliptical, glaucous on the lower surface, bright green on the upper, retuse and aristate, 2 cm. long, 1 cm. wide, with petiolules 2 mm. long; petioles generally shorter than the leaflets; stipules a tuft of bristles: racemes elongating in fruit, corymbose in flower, short-

pedunculate ; pedicels as long as the stipes, curving outwards, the stipes deflexed toward the stem : sepals ovate, tipped with a slender bristle of the same length, at length deciduous : petals yellow, oblong-ovate, 4 mm. long, 2 mm. wide, obtuse, sessile : filaments 8 mm. long, anthers linear, a little more than 1 mm. long, mucronate : ovary with 2 ovules in each cell : style curved, 3-4 mm. long : capsules horizontal, castle-shaped, tuberculated at summit, ribbed about the middle, but smooth on the lower third : seeds 1-2 in each cell : pods deciduous from the axis, leaving a perforation at base.

This was collected at Tucson, Arizona, August 20, 1894, by J. W. Toumey, who distributed it as *W. refracta* Engelm. It differs from this species in the scabrous pubescence and the shape and position of the two parts of the fruit. It is also related to *W. Palmeri* Gray but differs in the shape of leaves and fruit.

Lathyrus Brownii

Perennial from slender, running rootstocks, with stems apparently erect, climbing, 1-2.5 dm. high, glabrous throughout and glaucous, striate but scarcely angled : leaflets 4-8, opposite, elliptical to narrowly oblong, pale green on both sides, the younger ones somewhat glaucous, veiny, glabrous, 1-2 cm. long, 5-9 mm. wide, aristate ; petiolules 1 mm. long, petioles 5-10 mm. ; stipules semi-sagittate, entire or with few teeth, acuminate at each end, the lower part slightly shorter than the upper, 10-14 mm. long, about 3 mm. wide : tendrils abortive and reduced to a short bristle, or short and bifurcate : peduncles equalling or shorter than the leaves, spreading or declined, terminated by 2-3 violet flowers : calyx 7 mm. long, glabrous except for the ciliate margins, the two upper teeth deltoid, separated by a broad sinus, the three lower about twice as long, subulate, the middle division narrowest and 2-toothed at apex : corolla 1.5 cm. long, thin in texture ; banner with sides reflexed, 12 mm. wide when spread out, twice as broad as deep, the claw 7 mm. long, 9 mm. wide ; wings 6 mm. broad, surpassing the keel by 3 mm., with a claw 7 mm. long : staminal tube 2 mm. in diameter, loosely surrounding the ovary : pistil with incurved style hairy for half its length ; ovary smooth, containing about 12 ovules.

This was collected in 1890, on the north side of Mount Shasta, by H. E. Brown, in whose honor it is named. It is no. 391 of his collection.

This species is readily distinguished from other Californian species to which it is allied by the rudimentary tendrils, pale

glabrous foliage, and few-flowered racemes. It seems nearest to *L. palustris* L.

Clarkia parviflora

Stems clothed with white, smooth, shining, shreddy epidermis, simple or with upwardly spreading branches, 4–8 dm. high: leaves linear, tapering to a nerved petiole, acute, entire, puberulent, the longest 7 cm. long, 3 mm. wide: flower and buds nodding, the latter acuminate at each end and scattered: calyx-tube short, rather narrow, with the divisions united to one side by the tips: petals crimson or magenta, narrowly cuneate, bilobed at apex, 6 mm. long, 3–4 mm. wide, with clustered hairs at base: stamens with yellow anthers, all eight fertile, in two sets, the longer equalling the petals: style surpassing the stamens, with long, reflexed stigma-lobes: ovary sessile, curved downwards at first but becoming erect, quadrangular, acuminate with the pointed part one half to one third the entire length: seeds not ripe.

This approaches *C. Xantiana*, but has much smaller flowers, nodding instead of erect. It was collected at Kernville, Kern County, California, by Mr. T. S. Brandege, May 13 (the year is not given).

Scutellaria Nevadensis

Rootstocks moniliform: stems numerous from the base, purplish, cinereous with fine, short, curled, closely appressed pubescence, from less than 1 to 2 dm. high, slender, leafy and floriferous from almost the first leaves; internodes shorter or longer than the leaves; leaves ovate to elliptical, the cuneate base tapering to a petiole from 0.5–5 mm. long, obtuse, truncate or emarginate at apex, entire, 3–5-nerved from the base, the lowest 1–2 cm. long, diminishing upwards, 5–10 mm. wide: peduncles slender, about as long as the calyx: calyx large and conspicuous on account of the broad, wing-like crest, which surpasses the truncate entire tube, enlarging from 3 mm. in flower to 7 mm. in fruit: corolla purple, about 2 cm. long, the tube straight, moderately enlarging at the throat, with the two lips almost equal; the upper rounded, obtuse, the two lobes at the sides reflexed; the lower broader, crenately lobed, sparingly hairy within: filaments curved at apex; anthers ciliate, with emarginate apex and cordate base: nutlets covered with tentacle-like tubercles, turbinate.

This seems nearest to *S. nana* Gray, which it resembles in the pubescence and rootstocks, and more or less in the floral organs. It is different in every way; shape of leaves, size and shape of flower, stamens and seeds.

The type was collected by P. Beveridge Kennedy, of the University of Nevada, at Little Lakes Cañon, Western Stampede, Elko County, Nevada, July 1, 1902, being no. 546 of his collection, also no. 502 from the same locality, June 13, 1902.

Scutellaria linearifolia

Stems about 1 dm. high, slender, simple or branching from the base with erect branches, purplish brown at base: leaves linear with the edges folded backwards, 1–2 cm. long, 1–2 mm. wide, tapering to a sessile or short-petioled base, obtuse at apex, minutely and closely pubescent: flowers erect on filiform, spreading pedicels 5 mm. long, equal in length to the calyx: calyx with pubescence similar to that of the leaves, with shallow lobes and conspicuous crest: corolla 2.5 cm. long, the tube curving like the neck of a swan, throat moderately ampliate; upper lip 3-lobed, the middle lobe curved, the lateral lobes truncate, recurved; lower lip erect, not spreading, hairy within: stamens with filaments curved at top; anthers ciliate, the two cells spreading from the top: fruiting calyx apparently nodding.

This species is distinguished from *S. angustifolia* Pursh, under which it was placed, by much narrower leaves and flowers of quite a different shape. The type was collected at San Diego, California, June, 1876, by W. J. Fisher, being no. 586 of his collection. This is the only specimen seen.

Scutellaria Austinae

Stems erect, with ascending branches from near the base and sometimes above, purplish at base, glabrous to puberulent, slender, 1–2 dm. high: leaves erect, linear-oblong, entire (lowest spatulate), 2–3 cm. long, 3 mm. wide, the upper sessile, the lower on short petioles, closely pubescent, with prominent midvein, obtuse or acute at apex, tapering at base, generally twice as long as the internodes: flowers purple, erect, in the upper axils, 2–5 cm. long, on filiform pedicels as long as the calyx (3–4 mm.), erect-spreading: calyx minutely and closely pubescent, with shallow lobes and conspicuous crest tinged with purple: corolla purple, the tube slender; upper lip 3-lobed, with the lateral lobes folded backwards, the middle lobe longest, galeate and truncate; lower lip spreading, hairy in the throat: stamens exserted, with filaments curved under the anthers; these emarginate at apex and base, ciliate: nutlets unknown.

This is related to *Scutellaria angustifolia* Pursh, under which it has probably been included. It has much smaller flowers than that and an altogether different appearance.

The type was collected by Mrs. C. C. Bruce at Big Chico, Butte County, California, May, 1897, being No. 1835 of her collection. It is named in her honor and that of her mother, Mrs. R. M. Austin. With it I would also put no. 221 of the collection of H. E. Brown from Pitt River, Shasta County, also a specimen collected by Mrs. A. L. Coombes at Baird in the same county and one collected by the author between Shasta and Redding. There is another specimen, collected by the author on the road between Lewiston and Weaverville, Trinity County, which is doubtfully placed here. It has leaves longer and narrower and flowers not so spreading at the throat.

Fraxinus macropetala

Shrub, with ash-colored bark on the branchlets; leaves 3-5-foliolate, the terminal leaflet much larger than the lateral, obovate to broadly oval and orbicular, tapering at apex and base, decurrent on the petiolule, sometimes obtuse and truncate, entire or crenate, serrulate, 1.5-3 cm. long, 1- almost 2 cm. wide, the petiolule about half as long; lateral leaflets about one half the size of the terminal, obovate to lanceolate, the petiolules much shorter; the minute dark glands numerous, the pellucid ones few; surface glabrous or the petioles and rachis slightly scaly-puberulent: flowers perfect, in panicles terminating the branchlets; panicles erect in flower, pendulous in fruit, the peduncles and pedicels filiform, the latter shorter than the fully developed flowers: calyx with attenuate divisions unequal, equalling or longer than the campanulate tube, together 1.5 to 2 mm.: corolla green at first, becoming white, 12 mm. long, the four linear, involute divisions three times as long as the narrow tube: stamens 2, inserted at the base of tube, not reaching to the top, the brown linear-oblong anthers almost twice as long as the filaments, 2 mm.: ovary tipped by a short thick style: fruit linear-oblong, 2-2.5 cm. long, 5 mm. wide, the wing extending half way along the sides of the seed, about as long as or slightly longer than the kite-shaped seed, emarginate at apex, often tipped by the short persistent style.

This comes nearest to *F. cuspidata* Torr., but differs in the shape of the leaves and the longer fruit which is contracted somewhat at base. The calyx is different and the divisions of the corolla are much longer.

This was first collected by E. O. Wooton, July 9, 1902, in the Grand Cañon of the Colorado, being no. 1102 of his collection; this specimen is in fruit. The flowers were collected at the same place, on the Bright Angel Trail, by Dr. C. Hart Merriam, the middle of May, 1903. These specimens are both in the Herbarium of the California Academy of Sciences.

Convolvulus saxicola

Low, trailing, glabrous throughout: stems, peduncle, and petioles striate: leaves veiny, deltoid-sagittate with the apex rounded and mucronate, basal lobes overlapping, rarely with a broad sinus and the lobes separated, undulate, about 3 cm. long and as broad at base; petioles slender, 2–4 cm. long, surpassing the rather stout 1-flowered peduncles: bracts variable, sagittate, from very small and sessile to foliaceous, petioled and surpassing the bud, generally close to the flower: calyx with the outer sepals half as long as the inner, about equally broad, obtuse, truncate or emarginate, occasionally mucronate, sometimes almost membranous: corolla pale rose-colored with the angles darker: stigmas slightly surpassing the anthers: ovary with a hard dome-shaped top, tipped with a short stout spine, veiny, purplish where it joins the thin, green lower half: immature seeds black, irregularly angled, minutely papillose.

This grows on the rocky summits of the more elevated parts of Bodega Point, Sonoma County, California, and was collected by the author in April and on July 4, 1900.

It is near *C. polymorphus* Greene (Pitt. 3: 331) and might be included in the aggregate of forms under *C. luteolus* Gray.

Sphacele Blochmanae

Shrub 1 m. high, or more, forming a clump: older stems clothed with a red-brown epidermis which becomes shreddy; upper part brown or greenish, glandular and clothed with spreading, jointed, simple or forked hairs: leaves shorter or longer than the internodes, the lowest most distant, ovate-elliptical, 3–8 cm. long, 1–4 cm. wide, obtuse, cuneate at base and decurrent, crenate or obscurely serrate, upper surface green, somewhat scabrous-pubescent and glandular, the lower cinereous or white-tomentose with more numerous glands, veiny and becoming rugose; petioles broad, margined, the lower 1 cm. long or more, the upper leaves sessile: branchlets terminating in a simple raceme or a 3-rayed cymose panicle, the flowers often secund, with short slender pedi-

cles; lower bracts leaf-like, the upper green on both sides, ovate, clasping by a cordate base, acute, 2–10 mm. long: flowering calyx campanulate, rounded at base, 12–15 mm. long, with deltoid divisions less than 5 mm. long, sharply acute, hispid and glandular; fruiting calyx becoming more than twice as large, chartaceous and very veiny: corolla tinged with violet, 2.5 cm. long, the tube gradually enlarging from 2 mm. at base to 8 mm. at throat; upper lip 1 cm. wide, 6 mm. long; lower lip of 4 broad nearly equal lobes, 5 mm. wide, 3 mm. long: anthers obtuse, deeply sagittate, connected to the filament near the top, the body brown with the cells white; nutlets black-brown, globular, sparsely hispid.

This was collected by the author July 10, 1902, along the road on the hills not far from Pozo, on the road to La Panza, in San Luis Obispo County, California. The shrubs grew near a spring and were seen in only one place, though they were quite abundant and attracted attention at once from the difference in appearance to the other species. Compared with *S. calycina* Benth., the common species and that which it most resembles in general appearance, the leaves are dissimilar in shape and the flowers are quite unlike. In *S. calycina* the calyx is cuneate at base, in this obtuse; the corolla of this is only about half as broad as in the other and quite different in shape; the divisions of the calyx are shorter and less pointed.

This species is named in honor of my friend Mrs. Ida M. Blochman, whose kindness enabled me to collect the plants of this region and who has done much to make known the plants of the country around Santa Maria, California.

Monardella tomentosa

Stems several from a suffrutescent base, slender, hairy-tomentulose, 3 dm. high: leaves ovate-lanceolate, about 2.5 cm. long, 1 cm. wide, somewhat obliquely cuneate at base, obtuse at apex, more densely tomentose on the lower than the upper surface, principal veins evident; petioles 5 mm. long, becoming shorter towards the inflorescence: flowers capitate in a single terminal cluster, or with a few smaller heads in the upper axils subtended by 1–2 pairs of leaves as well as the involucre bracts; these ovate, 1 cm. long, tomentose and veiny but not membranous: calyx tubular, 8 mm. long, tapering at base, broadest near the middle, with 11 ribs, 5 subulate teeth 2 mm. long, tomentose throughout: corolla deep lilac, hairy, with the tube exerted 4 mm., the divi-

sions ribbon-like, the two upper ones cleft to below the middle, the three lower almost to the base : filaments slender, hairy below the middle ; anthers white : style surpassing the stamens : nutlets immature.

This was collected by the author at Laytonville, Mendocino County, California, Aug. 2, 1902.

It comes in the aggregate under *M. villosa*, but is quite unlike the type of that species as judged by a specimen collected at Bodega Bay, the type locality, which agrees exactly with the figure in Bot. Sulph.

Lappula micrantha

Stems leafy, branched from the woody root and paniculate above, about 5 dm. high : radical leaves oblong-lanceolate, some almost 2 dm. long, including the long margined petioles, canescent with appressed hairs ; upper leaves sessile, much shorter, about 5-10 cm. long, with apex mucronate or obtuse and margin entire : panicle loosely flowered, with open, spreading branches, the lower peduncles long, slender and naked, flowering at the end, the upper flowering almost to the base ; pedicels slender, as long as the calyx, deflexed after anthesis : divisions of calyx oblong-elliptical, obtuse, about 2 mm. long : corolla with tube shorter than the calyx, lobes obtuse, a little more than 1 mm. long, shorter than the tube, the yellow crests in the throat conspicuous : anthers about as long as the filaments, extending to the crests : style filiform, tipped by a capitate stigma : gynobase low, pyramidal : nutlets ovate, 5 mm. long, the ventral surface with an ovate scar with lines radiating from it to the margin, both sides bristly or scabrous ; margin edged with purple subulate awns, 3 mm. long, 1.5 mm. wide at base ; these large awns often with smaller awns at the sides and always with shorter ones alternating ; at the middle of the dorsal surface a solitary rather large awn projects.

This differs from all the described species in having much smaller flowers and in different character of the nutlets. The type was collected by the author at Twin Lakes, Trinity County, California, July 9, 1901. It grew along the banks of a small stream flowing from one of the high peaks into Cañon Creek.

Symphoricarpos glaucus

Shrub, with reddish brown epidermis, the older shreddy, the younger reddish and as if covered with a bloom, the pubescence of fine curly hairs : leaves glaucous, with pubescence like the stems, rhombic-obovate, the apex obtuse or callous-mucronate, at

base tapering to short connate petioles, margins thickened, entire or with a few obtuse teeth near the apex, strongly veined, the lower surface somewhat paler than the upper, 2–3 cm. long, 5–12 mm. wide: flowers in the axils of the upper leaves, with ribbed pedicels about as long as the bracts, bent so that the flower is horizontal or pendent: bracts at base of ovary ovate-acuminate, hairy, from one half to almost as long as the ovary: calyx purplish or glaucous, 2 mm. long, with the deltoid divisions half as long, obtuse, edged with white, minutely ciliate: corolla white or rose-colored, tubular-funnelform, about 1 cm. long, about 5 mm. wide at the tube, hairy within from the throat to the glandular lower part which is 2 mm. from the base: stamens with rose-colored, narrowly oblong, versatile anthers, on filaments half their length, inserted in the throat of the corolla: pistil not extending to the stamens, with thick glabrous style, 4 mm. long, tipped by a greenish black stigma: ovary oblong-elliptical in outline, glaucous, 3 mm. long, not conspicuously narrowed at the two ends.

This distinctly marked species is related to *S. rotundifolius*, under which it may have perhaps been included, but with the original description it does not agree. It was collected by Professor P. B. Kennedy of the University of Nevada, June 13, 1902, in Little Lakes Cañon, Western Stampede, Elko County, Nevada, being no. 503 of his collection.

Symphoricarpos parvifolius

A low, intricately branched shrub, with shreddy bark, the young twigs filiform, reddish, clothed with fine spreading pubescence: leaves thin and veiny, rhomboidal to elliptical, glaucous and with a fine spreading pubescence, acute, tapering at base to a short petiole, entire, 5–10 mm. long, 3–5 mm. wide; petioles broad and hairy: flowers in the upper axils on straight or curved pedicels, 1 mm. long: bracts at base of ovary pubescent, ovate-acuminate, connate: calyx crateriform, with glaucous, deltoid, acute divisions as long as the tube, glabrous, ciliate: corolla rose-colored, tubular-funnelform, 6 mm. long, tapering gradually from the top, 5 mm. across, to the base about 1 mm.; the tube hairy within from the base of the stamens to within 1 mm. of the base of the tube: stamens inserted in the throat, with the filaments shorter than the exerted anthers: style glabrous, 2 mm. long, with capitate stigma: ovary 2 mm. long, contracted at each end, glabrous.

This was collected on rocky slopes near Hockett Meadows, Little Kern River, Tulare County, California, June, 1896, by C. A. Purpus, being no. 1792 of his collection. It differs from allied

forms in the greater delicacy of all its parts, but in general most closely approaches *S. glaucus*.

Symphoricarpos Austiniae

Erect shrub, the older stems clothed with a gray-brown shreddy epidermis, the younger slender, reddish, puberulent, leafy : leaves ovate to elliptical, obtuse or acute at apex, obtuse, acute or cuneate at base, 1–2 cm. long, 7–12 mm. wide, the margins entire, thickened ; pubescence similar to that of the stem ; petioles 2 mm. long : flowers in the axils of the upper leaves and in short cymose clusters or umbels, erect or nodding at the ends of the branchlets, with the pedicels horizontal or downwardly curved ; bracts half as long as the ovary, ovate, acute, pubescent and ciliate : calyx 1.5 mm. long, the divisions deltoid, obtuse, as wide as long and half the entire length of the calyx, glabrous or very sparsely pubescent, ciliate : corolla tubular-funnelform, 9 mm. long, 4–5 mm. across the top, about 2 mm. at base, the lobes suborbicular, 2.5 mm. long, almost as wide, obtuse, subcordate at base ; tube densely hairy within from 2 mm. below the throat to within 2 mm. of the base ; anthers narrowly oblong, 1.5 mm. long, a little shorter than the filaments, exserted from the throat : style glabrous, 3 mm. long, with capitate stigma : ovary glabrous, 3 mm. long, 1.5 mm. broad at the middle, tapering to both ends : fruit immature, oblong-elliptical.

This is distinguished from allied forms by the long ovary tapering at both ends, the stamens and the position of the hairs in the tube of the corolla. It was collected on hills in Modoc County, California, by Mrs. R. M. Austin, in 1897, also on hills west of Goose Lake. Mr. T. S. Brandegee collected the same at Milford, Lassen County, June 26, 1892.

Symphoricarpos glabratus

Shrub, divaricately branched, with brown shreddy bark on the older stems, the younger twigs slender and reddish, glabrous throughout : leaves orbicular, obtuse or cuneate at base, mucronate or obtuse at apex, irregularly crenate-dentate or entire, conspicuously veiny, about 1.5 cm. in diameter ; petioles yellow, broadening at the connate base, about 2 mm. long, enclosing the conspicuous pointed buds : flowers solitary in the upper axils and in short spikes terminating the branchlets ; pedicels erect or curved, generally longer than the bracts ; these broad and connate, obtuse, minutely ciliate, about 1 mm. long and as broad : calyx crateri-

form, a little more than 1 mm. long, with broadly deltoid obtuse divisions scarcely half as long as the tube : corolla rose-colored, tubular-funnelform, 1 cm. long ; lobes rounded, as broad as long, subauriculate at base ; tube slightly hairy about the middle, glandular on the lower third : stamens exserted from the throat, the filaments half as long as the reddish, oblong, versatile anthers : style glabrous, 4 mm. long, with red, capitate stigma : ovary glabrous, oblong, not narrowed much at the two ends : fruit (immature) the same shape, but larger.

This was collected by the author at Trinidad, Colorado, June, 1891. It probably forms part of the aggregate included under *S. rotundifolius* Gray. It is quite unlike any other form which might be so included and does not agree with the original description of that species.

Echinocystis scabrida

Stems climbing by numerous branched tendrils, deeply and obtusely ribbed, glabrous or with a pubescence of scattered woolly hairs : leaves 5-7 lobed with triangular lobes less than half the length of the leaf, entire or with an occasional aristate-tipped tooth, the lobes terminating in a slender, rather long bristle ; upper surface scabrous, lower with pubescence like the stem, general outline orbicular, or wider than long, but varying much in size ; petioles generally longer than the leaves, broadening at base, ribbed : flowers white ; the staminate in racemes, rotate, scabrous on the inner surface and with a few scattered hairs on the outer, 2 mm. in diameter ; column of stamens short and thick : pistillate flowers 12 mm. in diameter, the lobes deeper than in the staminate flowers and with similar pubescence : stigma broad, sessile : ovary orbicular-ovate with a beak only 2 mm. long, tapering gradually, clothed with short weak bristles, containing 4 loculi, each with one ovule : bristles on the fruit flattened, weak, clothed with scattered woolly hairs, the surface below the bristles scabrous : seeds only one or two maturing, flattened-orbicular.

This is near *E. fabacea* Naud., but differs in the smaller, less spiny fruit, 4-celled instead of 2-celled ovary and the short instead of long beak to the ovary. It was collected by Mr. T. S. Brandegee in Fresno County, California, at Zapato, Chino Creek, March 26, 1893, and also at Alcalde in the same region.

Nemacladus gracilis

Sparingly pubescent and diffusely branching, 1 dm. high ; stems very slender, more or less zigzag : radical leaves spatulate, coarsely

dentate, together with the broad petioles 5–8 mm. long ; cauline leaves fleshy, entire, involute, appearing terete, falcately recurving, 1–5 mm. long : flowers very numerous, on capillary pedicels which are recurved-spreading but with the flowers erect, forming a graceful double curve : fruiting calyx with the divisions 3 mm. long, similar to the cauline leaves, tube 2 mm., obconic, veiny, in flower 1 mm. and as long as the divisions : corolla campanulate, with oblong, obtuse divisions twice as long as the broad tube : staminal column curved, with the anthers drooping after anthesis, white-hairy at apex, about 1 mm. long : stigma globular, glabrous : capsule shorter than the calyx, acute, half adnate to the calyx-tube : seeds numerous, reddish-brown, oblong, tapering to the white funiculus.

This is distinguished from other species by the double curve of the capillary pedicels, the large calyx, the peculiar corolla and the hairy apex of the style.

It is found in the hot interior valleys of the Coast Mountains. The type was collected by the author at Alcalde, Fresno County, California, May 9, 1893. There are two specimens in the herbarium of the Academy from San Luis Obispo County, one collected by L. Jared at Estrella, the other by the author at Santa Margarita, June 10, 1902.

Agoseris maritima

Caudex much branched from a perennial, woody root, crowned with leaves in close clusters, and ragged below with the imbricated, brown sheaths of dilated bases of old petioles : entire plant cinereous or tawny with soft closely appressed, curly, jointed hairs which become arachnoid on the petioles, scapes, and involucre : leaves oblong-spatulate, tapering to a margined petiole about equalling the blade, together 2–8 cm. long ; blades 1–2 cm. wide, with venation not evident except the broad midrib, margin sinuate-dentate or entire, apex acute or mucronate ; petioles clasping by the dilated base, becoming brown and membranous : scapes many, deeply ribbed, 5–15 cm. tall, lengthening in fruit, weak : heads 1.5 to 2.5 cm. high : rays yellow tinged with purplish brown, the five narrow teeth at the apex closely folded in the bud and forming a brown ball at the tip of each ray : bracts of the involucre densely arachnoid at base, in four series, the two outer 4 mm. broad, oblong, acute, arachnoid within at the tip, the inner linear-acuminate, foliaceous and arachnoid at tip, membranous below, surpassing the pappus in fruit, reflexed when the seeds have fallen, leaving the convex, muricate receptacle exposed : pappus pure

white, upwardly barbellulate, two thirds as long as the akene; this with ten strong ribs, tapering to the disk-like summit, the beak from one fourth to one half as long as the akene, together about 4 mm. long.

This is peculiar among Pacific Coast species in having the akene tapering to a beak. Under the genus *Troximon* in Gray's Synoptical Flora this would come under the section *Eutroximon*.

The type was collected at Bodega Point on the cliffs above the ocean, looking towards the west. It was in bloom in April and again in July and appears, like so many plants on the Pacific Coast, to be a plant that blooms throughout the year.

Crepis Cusickii

Stems erect, simple or branching from the base and below the middle, striate, 3 dm. high, sparingly floccose-tomentose, and with some gland-tipped hairs which become more numerous on the upper part: radical leaves oblanceolate-oblong, with broad margined petioles as long as the blade, together 1.5 dm. long, sheathing at base; blade laciniately dentate to entire with apex acute, base tapering to the petiole, 2-4 cm. wide; cauline leaves similar but sessile, diminishing upwards, the lower entire to laciniately dentate, the upper from dentate to entire, apiculate, tapering to a clasping base, sparingly ciliate: flowering stems with 2-4 heads cymosely branched and terminating stout peduncles, the earliest shortest; bractlets few, narrowly subulate-attenuate, as long as the outer involucreal scales: heads 2 cm. high, the involucreal scales in two ranks, the outer 3 mm. long, the inner more than 1 cm., with green central portion and membranous margin: rays 4-6, yellow, turning white in fading, edged with short obtuse linear teeth, each tipped with a tuft of white wool: pappus soft, white, capillary and barbellate: akenes 10-ribbed, oblong, tapering but slightly at each end, glabrous.

This was collected by William C. Cusick, July, 1902, on the western slope of the Cascade Mountains, near the southern boundary of Oregon. It is no. 2872 of his collection.

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